

SIMAP: Intelligent System for Predictive Maintenance: Application to the health condition monitoring of a windturbine gearbox

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Abstract-

SIMAP is the abbreviated name for the Intelligent System for Predictive Maintenance. It is a software application addressed to the diagnosis in real-time of industrial processes. It takes into account the information coming in real-time from different sensors and other information sources and tries to detect possible anomalies in the normal behaviour expected of the industrial components. The incipient detection of anomalies allows for an early diagnosis and the possibility to plan effective maintenance actions. Also, the continuous monitoring performed allows for an estimation in a qualitative form of the health condition of the components. SIMAP is a general tool oriented to the diagnosis and maintenance of industrial processes, however the first experience of its application has been at a windfarm. In this real case, SIMAP is able to optimize and to dynamically adapt a maintenance calendar for a monitored windturbine according to the real needs and operating life of it as well as other technical and economical criteria. In particular this paper presents the application of SIMAP to the health condition monitoring of a windturbine gearbox as an example of its capabilities and main features.

Index Terms- Predictive maintenance; Maintenance effectiveness; Health condition; Diagnosis; Artificial intelligence

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